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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,127	08/08/2001	Stephen Clark Purcell	TMC# BEL-032	5866

20350 7590 10/07/2005

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EXAMINER	
NGUYEN, KIMBINH T	
ART UNIT	**PAPER NUMBER**
2671	

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/925,127	PURCELL ET AL.	
	Examiner	Art Unit	
	Kimbinh T. Nguyen	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is responsive to amendment filed 08/13/04.

2. Claims 1-21 are pending in the application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 2, 8, 9, 14-16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao, U.S. Patent No. 6,002,406 in view of Kacevas et al. U.S. Patent No. 6,429,873.

Claims 1, 8 and 15, Zhao discloses a method for determining an amount of storage for a level of detail other than the base image (storing a data representation of an object in various LODs; abstract and col. 3, lines 4-7) in a MIP map (column 9 lines 1-8). However, Zhao does not specifically disclose identifying a given level of detail; identifying a size for an immediately larger level of detail and a magnitude for each dimension of the immediately larger level of detail; and calculating the amount of storage based on the size and magnitudes without using a multiply operation. This is disclosed in Kacevas et al in column 1 lines 24-35; fig. 1. The sizes are stored for later retrieval. Each size is half the previous size. So a division is used instead of multiply operation (without using a multiply operation). Because the sizes are figured before

hand and it doesn't say how the size was configured. As the specification says the size can be found by length times width, which is the area of the LOD. This area can also be found using addition (AND operation, OR operation, AND circuit 241, subtractor circuit 220). This size as taught by Zhao is the amount of storage of a LOD. It would have been obvious to one of ordinary skill in the art the time the invention was made to have finding the sizes of the LOD's this way because this is a quicker way to determine the size of the next LOD.

Claims 2, 9 and 16, Kacevas et al discloses scaling the size (column 1 lines 24-35, scaling by 2).

Claims 7, 14 and 21, Kacevas et al discloses wherein a storage alignment restriction requires the starting address for each level of detail to be a multiple of m pixels from a predetermined address, wherein identifying a size and magnitudes comprises: identifying the size and magnitudes in units such that each unit contains m pixels (fig 1).

5. Claims 3, 10, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao in view of Kacevas et al in further in view of Baldwin, U.S. Patent No. 6,650,333.

Claims 3, 10 and 17, Zhao and Kacevas disclose wherein the size after dividing the size is the amount of storage for a given level of detail. However, they don't disclose dividing each of the magnitudes by two and discarding any remainders; and dividing the size by 2expn and discarding any remainder, where n is the number of non-zero magnitudes remaining after dividing each of the magnitudes. This is disclosed in

Baldwin in column 10 lines 20-33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to discard the remainder because the LOD is always different by a power of two (column 10 lines 25-30).

6. Claims 4-6, 11-13 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao in view of Kacevas in view of Baldwin in further in view of Merz et al., U.S. Patent No. 4,692,880.

Claims 4, 11 and 18, Zhao with Kacevas and Baldwin do not disclose adding one to the amount of storage when any of the n least significant bits of the size of the immediately larger level of detail is non-zero. This is disclosed in Merz et al in column 7 lines 1-11. It would have been obvious to one of ordinary skill in the art to the adding one to the amount of storage because every LOD is going to take up more or less space in memory.

Claims 5, 6, 12, 13, 19 and 20, Merz teaches when dividing a number (a subspan), that is the same as shifting the binary equivalent to the right by one bit ((the basic subspan plus 1: X+1 or Y+1) and n bits (col. 7, lines 1-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an LOD shift adjustment taught by Merz into the system and method of Zhao for storing LOD in a MIP map, because it would allow a significant reduction in hardware map requirement (col. 2, lines 25-26).

Response to Arguments

7. Applicant's arguments filed 08/13/04 have been fully considered but they are not persuasive, because Zhao teaches a method for determining an amount of storage for a

level of detail other than the base image (storing a data representation of an object in various LODs; abstract and col. 3, lines 4-7) in a MIP map (column 9 lines 1-8). Further, both Zhao and Kacevas teaches the amount of storage based on the size and magnitudes without using multiply operation (Zhao: LOD cell size, col. 9, lines 1-14 and Kacevas using AND, OR operations). In addition, Kacevas describes in fig. 1 dividing the size by 2 where n is the number of non-zero magnitudes and n could be 1 to divide LOD3, U=16, V=4 and becomes LOD4, U=8, V=2. For these reasons, the rejection of claims 1-21 are maintained.

Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimbinh T. Nguyen whose telephone number is (571) 272-7644. The examiner can normally be reached on Monday to Thursday from 7:00

AM to 4:30 PM. The examiner can also be reached on alternate Friday from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached at (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 28, 2005

KIMBINH T. NGUYEN
PRIMARY EXAMINER